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ABSTRACT SUBMITTAL FORM

Subject Classification Category 4.2 ☒ Theory ☐ Experiment

Collisionless Absorption of Light Waves Obliquely Incident on Overdense Plasmas with Steep Density Gradients* T.-Y. B. Yang, W.L. Kruer and A.B. Langdon, *Lawrence Livermore National Laboratory*—Collisionless absorption of laser lights obliquely incident on overdense plasmas with steep density gradients is studied analytically and numerically. It is found that, due to the interaction of electrons and the normal component (parallel to the density gradient) of the laser electric field in the sheath region, efficient absorption can occur for a p-polarized incident light even when the light pressure is smaller than the plasma pressure. This absorption mechanism (sheath-transit absorption) is complementary to the Brunel's absorption which occurs when the light pressure is much greater than the plasma pressure, and to the resonance absorption which occurs when the density gradient is sufficiently gentle. The transitions from the sheath-transit absorption to the Brunel's absorption and to the resonance absorption will be discussed.

*Work performed under the auspices of the U.S. Department of Energy by the Lawrence Livermore National Laboratory under Contract W-7405-ENG-48.

This abstract has been reviewed and released by the Patents and Classification offices of Lawrence Livermore National Laboratory.

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